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REMARKS

Claims 1-24 are pending in the application. Claims 1, 8, 10, 13, 20 and 21 have been amended herein. Claim 2 has been canceled. Favorable reconsideration of the application, as amended, is respectfully requested.

I. CLAIM AMENDMENTS

Claim 1 has been amended to incorporate the features of previously dependent claim 2, and to address the newly raised claim objection. Claim 20 has been amended to incorporate features of dependent claim 21, and to address the newly raised claim objection. Claims 8, 10, 13 and 21 have been amended to provide consistency with the amendments to claims 1 and 20.

Accordingly, none of the amendments raise new issues of patentability. Moreover, such amendments place the application in condition for allowance as discussed more fully below. Entry of the amendments is respectfully requested.

II. OBJECTION TO THE CLAIMS

Claims 1-20 stand objected to as being incomplete. In particular, the claims are said to lack any interrelationship among the elements.

Claims 1 and 20 have been amended to specify more expressly that the electron-reflecting layer is provided between the p-cladding layer and the active layer, thus providing a more clear interrelationship among the elements.

Moreover, applicant respectfully submits that the optical semiconductor device of claims 1 and 20 is clearly described by the structural relationship of the claim elements. For example, the optical semiconductor device of claim 1 includes an active region; a p-doped cladding region disposed on one side of the active region; an electron reflecting barrier provided between the cladding region and the active region, the electron reflecting barrier being such that it provides a greater potential barrier to Γ-electrons than the p-doped cladding region, etc. Such recitation of the particular arrangement/structure of the elements and their atomic properties certainly satisfies the requirements under 35 USC §112.

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Further, the Examiner submits on page 8 of the Office Action that the energy levels of the Γ-electrons and X-electrons and the manner of production of the electrons is unclear. Claim 1 has been amended to remove the language of "energy levels" as the Examiner may be interpreting that the electrons have a particular energy level within the electron reflecting layer. By amending the claims, applicant intends to clarify that the electron reflecting barrier is provided as a potential barrier to reflect electrons. The particular manner of production of the electrons is not germane to the present invention. The production of Γ-electrons and X-electrons is well known in the art and is not necessary to recite in detail in the claims.

Accordingly, withdrawal of the objection is respectfully requested.

III. REJECTION OF CLAIMS 1-24 UNDER 35 USC §102(b)

Claims 1-24 stand rejected under 35 USC §102(b) based on *Seko et al.* Withdrawal of the rejection is respectfully requested for at least the following reasons.

i. Claim 1

A difference between the present invention and that which is taught in *Seko et al.* relates to the particular structures involved. The present invention is not a multi-quantum barrier (MQB) device, whereas *Seko et al.* discloses only a MQB device. Claim 1 has been amended to introduce the features of claim 2, comprising a first layer for reflecting Γ-electrons and a second distinct layer for reflecting X-electrons. Such distinct layering clearly indicates that the electron-reflecting barrier of the present invention is not an MQB. In an MQB, enhanced reflections of Γ-electrons occurs through an essentially quantum mechanical reflection/interference effect, and it is not possible to identify distinct layers for reflecting Γ-electrons and for reflecting X-electrons.

In *Seko et al.*, there is no teaching or suggestion of separate layers for reflecting Γ-electrons and for reflecting X-electrons. Therefore, *Seko et al.* does not teach or suggest an electron-reflecting barrier comprising a first electron-reflecting layer for reflecting Γ-electrons and a second electron-reflecting layer for reflecting X-electrons as

recited in amended claim 1. Withdrawal of the rejection of claim 1 and the claims dependent therefrom is respectfully requested.

ii. Claim 20

Claim 20, as amended, recites that the electron-reflecting layer is formed of AlP. The Examiner asserts that such feature is taught in *Seko et al.* at Col. 6, lines 1-14 and Col. 7, lines 1-33. (See, O.A., p. 5). However, applicant respectfully disagrees.

Seko et al. only discloses that the layers may be made of AlInP, comprising between 30% and 70% In. (See, e.g., Col. 6, lines 4 and 9, where $0.3<y<0.7$). *Seko et al.* does not teach or suggest the electron reflecting layer made only of AlP. Therefore, *Seko et al.* does not anticipate nor render obvious the invention as recited in amended claim 20. Withdrawal of the rejection of claim 20 and the claims dependent therefrom is respectfully requested.

IV. CONCLUSION

Accordingly, claims 1-24 are believed to be allowable and the application is believed to be in condition for allowance. A prompt action to such end is earnestly solicited.

Should the Examiner feel that a telephone interview would be helpful to facilitate favorable prosecution of the above-identified application, the Examiner is invited to contact the undersigned at the telephone number provided below.

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Should a petition for an extension of time be necessary for the timely reply to the outstanding Office Action (or if such a petition has been made and an additional extension is necessary), petition is hereby made and the Commissioner is authorized to charge any fees (including additional claim fees) to Deposit Account No. 18-0988.

Respectfully submitted,

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